

Bag-stimating Oysters

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| <u>Grade Level</u> | 5 th but can apply to many others! |
| <u>Learning Objectives</u> | The student will apply estimation, averaging, and graphing skills to the work they do bagging oysters. |
| <u>Guiding Question</u> | How many oyster shells did we bag today? How can we communicate our totals? |
| <u>Materials</u> | gloves, bags, clipboards, pencils, paper for tallying and estimations, plenty of oyster shells and bags, calculators, large paper for charts, markers and science notebooks. |
| <u>Teaching Time</u> | |
| <u>Seating Arrangements</u> | Small groups of four students. Rotate responsibilities of bag manager, shell manager, scorekeeper (counter), and a recorder. Two to three students per seat on the bus. |
| <u>Maximum Number of Students</u> | 28 students with plenty of adult supervision |
| <u>Key Words</u> | estimation, actual, tally, mesh bags, single, average, graph, communicate, work, safety |
| <u>Background Information</u> | Teacher needs to be familiar with a location with shells. Teacher also needs to know a bag supplier. Awareness of shell safety is a must! |
| <u>Learning Procedures</u> | <ol style="list-style-type: none">1. Explain the purpose of the field study.2. Describe the process of bagging oysters. If possible, have a bag of shells for students to see.3. Review estimation and reasons for estimation. Introduce the guiding question. Discuss.4. Express safety issues and procedures.5. Establish groups and load the bus. |

6. Divide student groups into different areas of the oyster pile.
7. Instruct groups to record their first estimation and begin bagging and counting.
8. Record actual number bagged. Rotate positions. Record next estimation. Bag and count. Record actual number bagged. Rotate and repeat until five bags of shells have been bagged. Students continue to bag and keep a tally of the total number of bags filled.
9. In their groups students will find the difference between each of their estimations and the actual number bagged.
10. When you return to class, model how to calculate an average. Each group works to calculate the average number of shells in each bag based on their five actual bag counts.
11. Teacher records each group's average and together, the class determines the class average of shells in each bag.
12. Create a chart to display each group's total number of bags filled today.
13. Direct students to reflect on their experiences in their science notebooks. Use a quick discussion session to stimulate thoughts regarding the experience of bagging, estimations, averages, and reading our graph.
14. Share notebook reflections.

Why is this Important to Me?

This lesson is important because it's an opportunity for students to apply mathematical concepts to a real life service project.

Assessment

Cooperative group observations. Develop a set of rubrics to assess students' notebook entries. Rubrics should focus on estimation, average, graphing, and service experiment.

Adaptations

Record more than five actual shell counts for more accurate averages. Smaller groups.

Resources:

<http://www.csc.noaa.gov/scoysters>

Cross-Curricular
Connections

ELA- Writing in science notebooks, speaking and listening skills.

Science Extensions

Take a trip in the spring to see how your reef is coming along. Discuss work needed to move bags and easier ways to get the job done.

South Carolina Curriculum Connections

Math:

I. Number and Numeration Systems

A. Develop number sense for whole number.

II. Numerical and Algebraic Concepts and Operations

E. Solve real-world and mathematical problem situations using algebraic concepts including variables and pen sentences.

1. The student will create and solve problems involving addition, subtraction, multiplication, and division of whole numbers, using paper and pencil, estimation, mental computation, and calculators.

F. Use mental computation, estimation, and calculators to predict results and evaluate reasonableness of results.

1. The student will use rounding, estimating, mental arithmetic, and/or calculators to predict results and determine the reasonableness of computations on whole numbers.

III. Probability and Statistics

B. Extend their understanding of probability and statistics by systematically collecting, organizing, discussing, and describing data using technology whenever appropriate.

C. Select and use a variety of representations for displaying data.

1. The student will collect, organize, construct, read, interpret, and display a set of numerical data in a variety of forms, given a problem situation, using tables, charts, pictographs, bar graphs, stem and leaf plots, and line graphs.

D. Construct, read and interpret tables, graphs, and charts.

1. The student will read and interpret tables, graphs, and charts.
2. The student will find the mean and mode of a set of data.

E. Make and justify predictions based on collected data or experiments, using technology whenever appropriate.

English/Language Arts:

5-W2. The student will write for a variety of purposes.

5-W2.1 Demonstrate the ability to use writing to explain and inform.